

Lesson 3

Investigate Like a Super Sleuth



Lesson Summary



Overview

The garden detectives use library resources to research one of the fruits or vegetables featured in the curriculum, write a “case report” that summarizes what they learned, and create a poster to share that knowledge with others. Working in small groups, students create Public Service Announcements (PSAs) about their assigned fruit or vegetable, which they present to classmates in Lessons 8-10 and to families and friends at the Sleuths’ Mystery Dinner.



Lesson Extensions

The detectives evaluate what makes a good PSA about fruits and vegetables in the lesson extension.



Key Messages

Be a great garden detective! Learn how fruits and vegetables help you eat smart to play hard.

Crack the case wide open! Share how fruits and vegetables help kids eat smart to play hard.



Garden Connection

The garden detectives are assigned to research specific fruits and vegetables that are being grown in the class garden. They take a photograph (or create a drawing to scale) of their assigned fruit or vegetable in the garden each week and post it on the bulletin board. As they do so, they report to the rest of the class on how their plants are growing.



School Food Service Connection

After students complete their posters, arrange with the school food service director to hang student posters in the cafeteria for other students to see.



School Connection

The school librarian can help students find research resources to develop their reports. Ask the librarian to prepare a display of books related to gardening, fruits and vegetables, and/or farming.



Home Connection

Send the *Garden Detective News* home to parents/caregivers. Encourage students to solve the fruit and vegetable riddles with their parents/caregivers.



Cookbook Connection

The *Garden Detective News* suggests that families prepare a snack or side dish with the fruit or vegetable being studied. Ask students to bring the recipe to class to include in the cookbook.



Media Connection

Invite a local TV station or community cable channel to record and air students’ PSAs to fulfill its public interest requirements.

Main Lesson: Investigate Like a Super Sleuth

Standards Addressed

Science

Standard F, Science in Personal and Social Perspectives (Personal Health/Nutrition): *Develop an understanding of how various foods contribute to health.*

English/Language Arts

Standard 5, Reading Informational Text: *Use text features and search tools to locate information relevant to a given topic efficiently.*

Standard 2, Writing: *Write informative/explanatory texts to examine a topic and convey ideas and information clearly.*

Standard 7, Writing: *Conduct short research projects that build knowledge about a topic.*

Standard 1, Speaking and Listening:

Engage effectively in a range of collaborative discussions with diverse partners on grade 3/4 topics and texts, building on others' ideas and expressing their own clearly.

Health

Standard 1, Concepts: *Comprehend concepts related to health promotion and disease prevention to enhance health.*

Standard 3, Access Information: *Demonstrate the ability to access valid information, products, and services to enhance health.*

Learning Objectives

Students will be able to:

1. Apply library research skills to identify research resources.
2. Write a brief research report.
3. Create citations using approved format.
4. Develop persuasive messages about fruits or vegetables.

Time Required

90 minutes

- 60 minutes for case report
- 30 minutes to plan a PSA

Materials

- *Student Handout 3.1, Mission: Dig for Clues* and *Student Handout 3.2, Public Service Announcement*
- Posterboard/crayons/markers for posters. Posters should be large enough to be visible at a distance since they are to be hung in the school cafeteria.

Preparation

- Duplicate *Student Handouts 3.1* and *3.2*, one for each student, on 3-hole-punch paper.
- Ask the librarian to help students find appropriate research materials for their research assignment.

Instructional Process

STEP 1

Introduce students to the case report

assignment. Explain to students that they are going to write a short (1-2 page) case report about a fruit or vegetable. (If you have assigned students to tend to a specific fruit or vegetable in the garden, assign that group of students to “their” fruit or vegetable.) A case report is a summary of what a detective learns about a case that he or she is working on.

Each student will write his or her own case report. Each student will also draw a poster about the fruit or vegetable that will be displayed in the school cafeteria (or elsewhere in the school). When the papers and posters are completed, students will work together with the other members of their group to develop a PSA designed to persuade others to try tasting and/or eating that fruit or vegetable.

Distribute *Student Handout 3.1, Mission: Dig for Clues* (the graphic organizer on pages 2-3 of the handout is optional). Review with students what information must be included in their case reports:

- A description of the fruit/vegetable
- What part of the plant is eaten
- Why eating the fruit/vegetable is good for you
- Additional interesting facts about the fruit/vegetable, e.g., historical or geographic facts

Remind students that they need to find reliable sources of information for their reports. Write the following guidelines on the board:

- Identify the author or source of the information.
- Decide if the author is an expert based on his qualifications.
- Does the author tell you where you can get more information on this subject?
- Make sure the information is up-to-date (e.g., is there a date that tells you when the information was last updated? Is it relatively recent?).

Tell students when their case reports and posters are due. Allow at least 1 week for students to complete this assignment.

Remind students to be great garden detectives in searching for information to write their case report. They will learn how fruits and vegetables help them eat smart to play hard.

STEP 2

Visit the library to begin research on the case reports. Have the librarian show students how to research their topics using materials in the library and/or on the Internet. Allow time for students to begin to collect their research. They should continue this at home.

STEP 3

Have students create PSAs. After students have completed their reports and posters, distribute *Student Handout 3.2, Public Service Announcement*. Review the definition of a PSA on the handout. Have students meet in small groups to plan their PSAs. All students assigned to a specific fruit or vegetable will comprise each small group. Announce when the groups will present their PSAs and where (e.g., in class, on morning announcements, on local media).

As students work in their small groups, circulate around the room to be sure that students are on task.

Tell the students that their poster and PSA will help to crack the case wide open! They will creatively share how fruits and vegetables help kids eat smart to play hard.

Teacher Background Information

Interesting Facts about Fruits and Vegetables

Vocabulary

Case Report: A summary of what the detective has learned about a case that she or he files with the detective agency or client.

Clue: A fact that helps solve a mystery.

Investigate: Conduct research by looking for clues.

Public Service Announcement (PSA):

A short message that appears on radio or TV to promote a service or idea that is good for people's health and well-being. A PSA is just like a commercial for a product, except that a TV or radio station plays it for free as a public service.

Sleuth: Another name for a detective.

Share some of the following interesting facts with students to pique their interest in digging deeper into their research about fruits and vegetables.



Leaf Lettuces

- The growing popularity of ready-to-eat packaged salad greens, introduced in the late 1980s, has contributed to the dramatic growth in the amount of romaine, leaf lettuce, and spinach available for consumption in the United States.
 - Most dark green lettuces are an excellent source of vitamin A, and contain vitamin C and potassium. The vitamin A comes from beta carotene, whose yellow-orange color is hidden by green chlorophyll pigments. Beta carotene is converted to vitamin A in the human body.
 - Due to the extremely high water content of lettuce, 94.9 percent, there are no successful methods of long-term home preservation for lettuce. Lettuce does not respond well to freezing, canning, or drying. For optimal nutritional value, lettuce should be eaten while it is fresh and crisp.
 - Lettuce is believed to be one of the first vegetables brought to the New World by explorer Christopher Columbus and has been grown in the United States since colonial times.
 - In the early 1900s, the ice shipping industry developed in the western States. This made it easier to ship lettuce to many areas of the country, expanding the popularity of lettuce.
- Lettuce belongs to the daisy or sunflower family.
 - Lettuce, in terms of production value, is the leading vegetable crop in the United States. More than 90 percent of United States lettuce production is located in California and Arizona. The main varieties include iceberg, romaine, and various leaf varieties.



Swiss Chard

- Swiss Chard is a member of the beet family. Only the leaves are eaten.
- Chard leaf stalks come in white, yellow, or red leaf stalks.
- Chard is an excellent source of vitamin A and a good source of vitamin C. It also includes calcium, magnesium, potassium, and fiber.
- Chard goes by many names—Swiss chard, leaf beet, seakettle beet, and spinach beet, to name a few. It is a beautiful large-leaf vegetable with wide flat stems resembling celery.
- The word “Swiss” was used to distinguish chard from French charde or chardon by nineteenth century seed catalog publishers and the name stuck. Chard is very popular among Mediterranean cooks but the first varieties have been traced back to Sicily. In the United States, the leaves are preferred while European cooks value the stalks to the point of discarding the leaves or feeding them to animals.



Spinach

- Spinach is an excellent source of vitamin A and a good source of vitamin C. It contains potassium, folate, and calcium. Spinach can be grown as a spring and a fall crop.
- China is the world’s leading producer of spinach, followed by the United States. In the United States, California, Arizona, Texas, and New Jersey grow the most spinach.
- There are three basic types of spinach:
 - Flat or smooth leaf—has unwrinkled, spade-shaped leaves (usually used for canned and frozen spinach or in other processed foods)
 - Savoy—has crinkly, dark green curly leaves (usually sold fresh)
 - Semi-Savoy—has slightly curly leaves (usually sold fresh)
- Spinach is a native of Southwest Asia and has been grown in China since at least the 7th century. Spinach use was recorded in Europe as early as the mid-13th century, with colonists carrying spinach seed to the New World.



Carrots

- Carrots are an excellent source of vitamin A and provide a great deal of the vitamin A in the United States diet. Vitamin A is synthesized in humans by the breakdown of carotenes, the orange pigments in carrot roots.
- More beta-carotene is present in carrots that have a dark orange color.
- Carrots are a member of the parsley family, which also includes celery, anise, and dill.
- The top three fresh carrot-producing States in 2010 were (in order): California, Michigan, and Texas.
- Since the late 1980s, baby carrots or mini-carrots have been a popular ready-to-eat snack food available in many supermarkets. Baby carrots were once longer carrots that have been peeled, trimmed, and packaged.
- The carrot originated around Afghanistan and possibly northern Iran and Pakistan.
- Different colors of carrots were grown at different times over the centuries:
 - 900–1000 AD: Purple and yellow carrots were grown from Afghanistan to the eastern Mediterranean
 - 1300s: Purple and yellow carrots were grown in Western Europe and China
 - 1600s: Yellow carrots were grown in Japan
 - 1700s: In addition to purple and yellow, white carrots were reported in Europe with an orange type first reported in the Netherlands and adjoining regions

- Today: Orange carrots are most common worldwide, although some white types persist in Western and Eastern Europe; some red (not orange) in Japan; some yellow and purple in the Mideast; and some purple, yellow, and red from Turkey to India and China.



Beets

- Beets are also known as beetroot. They are a good source of folate and include potassium, vitamin C, and fiber.
- Beet leaves (tops) can be eaten, too and are an excellent source of vitamins A and C.
- Beets are a vegetable native to Europe and parts of Asia, and cultivated in most cool regions. Its leaves are green or red and edible, though it is generally grown for its thick red or golden root. Some varieties are eaten as a vegetable; others are a source of sugar; and some are used as food for animals.
- Beets are available year-round because they thrive in more than 30 states. June through October is their peak season.
- The types of beet we are familiar with—those that produce large, fleshy, edible roots—were not known 2,000 years ago. The ancients used the root of the wild beet or chard for medicinal purposes.
- The red beet with a turnip-like root was first described as a food plant in Germany in 1558 and was a rarity at that time in northern Europe. The improved beet was called “Roman beet” in the 16th century in northern Europe and France, since it came from Italy.

- Colors of beets may range all the way from extremely dark purplish red to bright vermillion and to white. The roots of some varieties, when cut, show distinct light and dark rings, even white alternating with red or purple, like a bulls-eye target.
- Eating beets can cause urine to become red or pink in color in some people. This condition is called “beeturia.” It is not harmful.



Strawberries

- Strawberries are the fifth most preferred fresh fruit in the United States, behind bananas, apples, oranges, and grapes. The United States strawberry industry is mostly located in the southern and coastal areas in California. Florida and Oregon are the second and third largest producing States.
- Strawberries are a member of the rose family.
- Strawberries are usually available fresh year round with a peak from April to July.
- Strawberries are an excellent source of vitamin C. Four strawberries (about ½ cup) will provide over half the recommended daily intake of vitamin C for kids.
- Wild strawberries have been known since the times of the Greeks and Romans.
- The American Indians were already eating strawberries when the colonists arrived. The crushed berries were mixed with cornmeal and baked into strawberry bread. After trying this bread, colonists developed their own version of the recipe and strawberry shortcake was created.
- The strawberries native to the Americas were bigger than European strawberries.

- Strawberries are the only fruit with their seeds on the outside. Every strawberry, no matter the size, has about 200 seeds.



Raspberries/Blackberries

- Raspberries and blackberries are excellent sources of vitamin C and good sources of fiber.
- Blackberries and raspberries are generally referred to as caneberries, which includes all berries that grow on a cane. They are also referred to as “bramble” plants. All caneberries have perennial crown and root systems, and produce biennial shoots that bear fruit every other year.
- Blackberries are native to several continents, including Asia, Europe, and North and South America, and people have been eating them for more than 2,000 years.
- Initial United States commercial blackberry production started in the Pacific Northwest region in 1860, using plants cultivated from European domesticated species.
- Blackberry peak season is June and July, with harvesting beginning in May and ending in September.
- Raspberries continue to rank as the third most popular berry in the United States for fresh use, after strawberries and blueberries. Raspberries come in red, black, purple, and yellow varieties.
- The United States is the world’s third-largest producer of raspberries. Although production occurs across much of the country, most of it is concentrated in Washington, California, and Oregon.
- Raspberry season begins in June and lasts through October.

Sources

Nutrition Facts

United States Department of Agriculture, Agricultural Research Service. 2011. USDA National Nutrient Database for Standard Reference, Release 24. Nutrient Data Laboratory Home Page, <http://www.ars.usda.gov/ba/bhnrc/ndl>

Gardening and Historical Facts

“Beet.” World Encyclopedia. 2005. Retrieved August 02, 2012 from Encyclopedia.com: <http://www.encyclopedia.com/doc/1O142-beet.html>

“Carrot Facts.” Agricultural Research Service, USDA. Retrieved August 02, 2012 from [ars.usda.gov](http://www.ars.usda.gov/Research/docs.htm?docid=5231): <http://www.ars.usda.gov/Research/docs.htm?docid=5231>

“Chard.” University of Illinois Extension, University of Illinois at Urbana-Champaign. Retrieved August 02, 2012 from [urbanext.illinois.edu](http://urbanext.illinois.edu/veggies/chard.cfm): <http://urbanext.illinois.edu/veggies/chard.cfm>

“First Beets Yielded Only Greens.” Aggie Horticulture, AgriLIFE Extension, College Station, TX 77843. Retrieved August 02, 2012 from [aggie-horticulture.tamu.edu](http://aggie-horticulture.tamu.edu/archives/parsons/publications/vegetabletravelers/beets.html): <http://aggie-horticulture.tamu.edu/archives/parsons/publications/vegetabletravelers/beets.html>

“Fruits.” United States Department of Agriculture, Agriculture Marketing Resource Center. Retrieved August 02, 2012 from [agmrc.org](http://www.agmrc.org/commodities__products/fruits): http://www.agmrc.org/commodities__products/fruits

“Lettuce.” University of Illinois Extension, University of Illinois at Urbana-Champaign. Retrieved August 02, 2012 from [urbanext.illinois.edu](http://urbanext.illinois.edu/veggies/lettuce.cfm): <http://urbanext.illinois.edu/veggies/lettuce.cfm>

“Spinach.” University of Illinois Extension, University of Illinois at Urbana-Champaign. Retrieved August 02, 2012 from [urbanext.illinois.edu](http://urbanext.illinois.edu/veggies/spinach.cfm): <http://urbanext.illinois.edu/veggies/spinach.cfm>

“Strawberry.” University of Nebraska, Lincoln Extension. Retrieved August 02, 2012 from [lancaster.unl.edu](http://lancaster.unl.edu/nep/FruVegbw.pdf): <http://lancaster.unl.edu/nep/FruVegbw.pdf>

“Strawberries & More.” University of Illinois Extension, University of Illinois at Urbana-Champaign. Retrieved August 02, 2012 from [urbanext.illinois.edu](http://urbanext.illinois.edu/strawberries/facts.cfm): <http://urbanext.illinois.edu/strawberries/facts.cfm>

“Vegetables.” United States Department of Agriculture, Agriculture Marketing Resource Center. Retrieved August 02, 2012 from [agmrc.org](http://www.agmrc.org/commodities__products/vegetables/): http://www.agmrc.org/commodities__products/vegetables/

Other Facts

Eastwood, M.A. & Nyhlin, H., (1995). Beeturia and colonic oxalic acid. *Quarterly Journal of Medicine*, 88(10): 711-717.

Student Handout 3.1

Mission: Dig for Clues



Name: _____ Date _____

As a super sleuth, your job is to dig for clues about how fruits and vegetables help you eat smart and play hard. After you've done your digging, present the results of your investigation in a case report. A case report is a summary of what a detective has learned about a case that she or he files with the detective agency or client.

- Your report should include:
 - A description of the fruit/vegetable
 - What part of the plant is eaten
 - Why eating the fruit/vegetable helps you to be healthy and play hard
 - Additional interesting facts about the fruit/vegetable
 - Historical facts (for example, how the fruit/vegetable changed over time)

- Geographic facts (for example, where the fruit/vegetable is mostly grown).
- Bibliography (list books and Web sites you used)
- Introduce your report in a way that grabs the reader's interest.
- End your report in a way that emphasizes the main point of your report.

You should use at least two books or Web sites to find information for your report. List them at the end of your report.

Draw a poster that encourages other students to eat the fruit or vegetable you researched. Include in the poster one or more facts that you learned about it.

Crack the case wide open!

Share how fruits and vegetables help kids eat smart to play hard.



Student Handout 3.1

Mission: Dig for Clues, continued



Name: _____

My Case Report about _____

Paragraph 1

Write a sentence that tells what fruit or vegetable is the subject of your report:

Paragraph 2

Write 2-3 sentences that describe your fruit/vegetable

- Color
- Shape
- Texture/feel
- Smell

Paragraph 3

Write 2-3 sentences that identify what part of the plant it is and the job it does for the plant.

Student Handout 3.1

Mission: Dig for Clues, continued



Name: _____

My Case Report about _____

Paragraph 4

Write 2-3 sentences about how this fruit or vegetable helps you stay healthy and play hard.

Paragraph 5

Write 2-3 sentences that explain something most people don't know about this fruit or vegetable.
For example: Where does it grow? Are there different colors/types? Did it play a role in history?

Bibliography

List the books, articles, and Web sites that you used to write your report.

Student Handout 3.2

Public Service Announcement



Name: _____ Date _____

A Public Service Announcement (PSA) is just like a commercial—it presents a persuasive message in a catchy way. A PSA is different from a commercial, however, because it is about a service or idea that is good for you and because PSAs run for free on radio and TV stations.

You will work with other students who are writing about the same fruit or vegetable that you are. Together you will plan a 1-minute PSA (a commercial) to present to the class to persuade other students to try your fruit or vegetable.

Be creative! Think about the ads that you like best and what makes you like them. You could make your PSA a skit, a jingle or short tune, a cartoon, or whatever you think would work best.

Decide together what you want your PSA to be. Divide up the work so that everyone in the group participates in the presentation. For example:

Writer(s): _____

Performer(s): _____

Costume(s): _____

Graphics: _____



Garden Detective News



Grow Healthy Habits With Your Children

Ask your child to share what he or she learned about fruits and vegetables.

3



United States
Department of
Agriculture



Garden Detective News

Every garden detective in our class is researching and writing a report about a fruit or vegetable in our garden. Ask your child which fruit or vegetable he or she is studying. You may want to add this fruit or vegetable to a family meal. Experiment with new recipes using this fruit or vegetable with your child.

When you find a recipe that your family likes, send it to school so we can include it in the class cookbook.

Mystery Solved!

Ways To Help Your Child Eat More Fruits and Vegetables.

1. **Choose fruits and vegetables rich in color.** Brighten your plate with vegetables that are red, orange, and dark-green. They are full of vitamins and minerals. Try spinach, leaf lettuce, carrots, beets, Swiss chard, strawberries, and raspberries/blackberries. They not only taste great but are good for you, too.
2. **Check the freezer aisle.** Frozen fruits and vegetables are quick and easy to use. They can be just as nutritious as fresh when they are packaged without added fats, sugars, or sodium (salt). Try adding frozen peas, green beans, spinach, sugar snap peas, or vegetable blends to some of your favorite dishes or eat them as a side dish.



Family Activity 3

Fruit and Vegetable Riddles

Try solving the following riddles with your child:

What Am I?



1. I'm a vegetable that grows under the ground and has a green top. Eating me helps you have good eyesight. What am I?

2. I'm a beautiful red fruit that grows in early summer. I taste sweet and you can eat me in a smoothie, in your cereal, or all by myself. What am I?

3. I'm a leafy dark-green vegetable that likes cool weather. I can be eaten raw or cooked. What am I?

4. I'm a leafy green vegetable that comes in different colors... including red! You most likely eat me in a salad or on a sandwich next to a slice of tomato. What am I?

5. I'm round and grow under the ground. My tall green tops taste good in soups and salads, but my red or golden root tastes nice and sweet. What am I?

6. I am a red or black fruit that can stain your hands when you eat me. I grow on bushes and I taste good on your cereal. What am I?

7. I'm a leafy vegetable that grows in the garden. I can be green and white or red and green—either way, I taste the same! Most people cook me, but you can eat me raw, too. What am I?

Answer Key: 1. Carrot. 2. Strawberry. 3. Spinach. 4. Leaf lettuce. 5. Beets. 6. Raspberries/blackberries. 7. Swiss chard.

Try These Kid-Friendly Snack Ideas:

Fruit Wands With Yogurt Dip

- Put pieces of fruit on a toothpick, skewer, or straw.
- Cover with plastic wrap and store in the refrigerator until snack time.
- Serve with low-fat strawberry (Princess Dip) or lime (Swamp Slime) yogurt for dipping.

Happy Snack Packs

- Fill small containers or snack bags with cut-up veggies.
- Add a small container of fat-free ranch dressing for dipping.
- Decorate the outside of the bags with stickers.
- Store in the refrigerator on a shelf where they are easy for your child to see.





Lesson Extension: Learn More About PSAs

Standards Addressed

English/Language Arts

Standard 1, Speaking and Listening: *Engage effectively in a range of collaborative discussions with diverse partners on grade 3/4 topics and texts, building on others' ideas and expressing their own clearly.*

Standard 2, Speaking and Listening: *Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.*

Health

Standard 1, Concepts: *Comprehend concepts related to health promotion and disease prevention to enhance health.*

Standard 3, Access Information: *Demonstrate the ability to access valid information, products, and services to enhance health.*

Learning Objectives

Students will be able to:

1. Explain what a Public Service Announcement (PSA) is.
2. Analyze characteristics of PSAs that make them effective.

Time Required

20 minutes

Materials

- Examples of PSAs. (You can find links to downloadable PSAs at <http://www.fns.usda.gov/cnd/healthierschoolday/media.htm>.)

Instructional Process

STEP 1

Review what a PSA is (see *Student Handout 3.2*).

STEP 2

Show examples of PSAs to students.



Ask students:

After each PSA, ask students:

- What was the main message of this PSA?
- What tools (e.g., music, story) did the PSA use to get its point across?
- Who is the main audience for this PSA? (e.g., adults, children, teens)
- How effective do you think this PSA is?

STEP 3

Discuss with students what makes an effective PSA.



Ask students:

- Which PSAs do you think told the story best?
Why?

Tell students to keep these ideas in mind as they develop their own PSAs about their assigned fruit or vegetable.